REMARKS

The specification has been revised to correct several errors in spelling and reference-symbol usage. The application information, including the application number, given for the additional U.S. patent application cited in paragraph 56 has been corrected in accordance with the application information given in paragraph 57 where that additional application is again cited. Also, the status information for the second additional U.S. patent application cited in paragraph 57 has been updated to identify the patent number for the second additional application.

Claims 1, 3, 4, 9, 10, 13, 15, 17, 24, 26, 31, 33, 37, 39, 41, and 43 have been amended. The revisions to independent Claims 1, 13, 31, and 39 are discussed below. The revisions to the remainder of the amended claims have been made to clarify their subject matter, to correct a grammatical error and a punctuation error, to accommodate the revisions to Claims 1, 13, 31, and 39, and (in the case of Claims 3 and 15) to substitute light-emitting-device material for electron-emitting-device material transferred to Claims 1 and 13. Claims 47 - 60 have been added. Consequently, Claims 1 - 60 are now pending.

Claims 17 - 21 have been rejected under 35 USC 112 as indefinite for failing to particularly point out and distinctly claim the invention. This rejection is respectfully traversed in view of the revisions to the claims.

The Examiner states that "Claims 17 - 21 recite a gas permeable wall between a gas source and the hermetically sealed enclosure" and that "This is a contradiction of the definition of a 'hermetically sealed enclosure' and thus renders the claim indefinite". The Examiner goes on to say that "These claims would be definite if 'open space' were substituted for 'sealed enclosure' in line 3 of Claim 17".

Generally in accordance with the Examiner's suggestion, Claim 17 has been amended to recite that the inert-gas reservoir has "a wall through which inert gas passes from the container to the open space of [emphasis added] the sealed enclosure". As so-revised, Claim 17 is not indefinite. Accordingly, the 35 USC 112 indefiniteness rejection should be withdrawn with respect to Claim 17 and with respect to Claims 18 - 21 since they all depend from Claim 17.

Claims 1, 2, 5 - 7, 11, 13, 14, 16, 23, 24, 27 - 29, 31, 32, 34, 35, 37, 39, 40, 43, 45, and 46 have been rejected under 35 USC 102(b) as anticipated by Rakhimov et al.

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("Rakhimov"), U.S. Patent 6,005,343. This rejection is respectfully traversed in view of the revisions to the claims.

Rakhimov discloses a lamp suitable for use as a backlight in a liquid-crystal display. The lamp includes a backplate (unlabelled) and transparent frontplate 11 coupled together through an outer wall (unlabelled) to form sealed enclosure (envelope) 12. Cathode 14, grid 16, transparent conductive layer 18, and phosphor layer 20 are situated inside enclosure 12. Conductive layer 18 is situated between, and in contact with, phosphor layer 20 and frontplate 11. Cathode 14 lies between the backplate and phosphor layer 11. Grid 16 is situated between, and spaced apart from, cathode 14 and phosphor layer 20.

A plasma formed from working gas 22 is present in enclosure 12 at a pressure of 0.1 - 100 torr. Rakhimov specifies that working gas 22 may be an inert gas such as helium, neon, argon, xenon, or a mixture of these four gases.

During operation of Rakhimov's lamp, electrons emitted by cathode 14 pass through grid 16 traveling toward phosphor layer 20. Some of the electrons strike atoms of working gas 22 and cause them to ionize. Resultant positive inert-gas ions travel backward toward cathode 14 and cause it to emit secondary electrons. Upon being struck by electrons or/and ultraviolet ("UV") light emitted by the plasma, phosphor layer 20 emits light that passes through frontplate 11.

Independent structure Claims 1 and 13 have been amended to respectively incorporate the further limitations of dependent Claims 3 and 15 that the electron-emitting devices of the claimed structures each include an array of laterally separated electron-emissive regions situated over a backplate. Independent method Claims 31 and 39 have similarly been amended to respectively incorporate the further limitations of dependent Claims 33 and 41 that the electron-emitting devices of the structures under cleaning each have an array of laterally separated electron-emissive regions.

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Cathode 14 in Rakhimov appears to emit electrons from substantially the entire portion of the surface closest to grid 16. Nowhere does Rakhimov indicate that cathode 14 contains laterally separated electron-emissive regions that emit electrons. Rakhimov does not meet the requirement of any of amended Claims 1, 13, 31, and 39 that the electron-emitting device have an array of laterally separated electron-emissive regions. Consequently, Rakhimov does not anticipate any of Claims 1, 13, 31, and 39.

Furthermore, nothing in Rakhimov would provide a person skilled in the art with any motivation or incentive for configuring cathode 14 to have an array of laterally separated electron-emissive regions. As far as Applicants' Attorney can determine, no useful purpose would be served by configuring cathode 14 to have an array of laterally separated electron-emissive regions. Configuring cathode 14 in such a manner would appear to decrease the efficiency of Rakhimov's lamp, a highly undesirable result. Rakhimov thus does not make any of Claims 1, 13, 31, and 39 obvious. Accordingly, these four claims are patentable over Rakhimov.

Claims 2, 5 - 7, 11, 14, 16, 23, 24, 27 - 29, 32, 34, 35, 37, 40, 43, 45, and 46 variously depend (directly or indirectly) from Claims 1, 13, 31, and 39. Consequently, dependent Claims 2, 5 - 7, 11, 14, 16, 23, 24, 27 - 29, 32, 34, 35, 37, 40, 43, 45, and 46 are patentable over Rakhimov for the same reasons as Claims 1, 13, 31, and 39. New Claims 47 and 48 respectively depend from Claims 31 and 39 and are similarly patentable over Rakhimov for the same reasons as Claims 31 and 39.

Claims 1 - 3, 5 - 8, 10, 13 - 16, 23 - 25, 27, 28, and 31 - 46 have been rejected under 35 USC 102(b) as anticipated by Cho et al. ("Cho"), U.S. Patent 5,977,706. This rejection is respectfully traversed.

Cho discloses various flat-panel displays provided with getters. Each display has baseplate structure 40 and transparent faceplate structure 42 coupled together through outer wall 44 or 110 to form a sealed enclosure. Each display may have a getter situated inside the sealed enclosure formed with components 40, 42, and 44 or 110 as illustrated for getter 50 shown in the flat-panel-display embodiment of Fig. 4h. Alternatively, components 40, 42, and 44 or 110 may form main compartment 70 with a getter situated in auxiliary compartment 72 connected to main compartment 70 as illustrated for getter 74 in the flat-panel-display embodiment of Figs. 7a and 7b (collectively "Fig. 7").

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At col. 9, Cho indicates that the flat-panel display of Fig. 4h can be any of a number of different types of flat-panel displays such as a high-vacuum cathode-ray tube ("CRT") display, a reduced-pressure plasma display, or a reduced-pressure plasma-addressed liquid-crystal display. For a high-vacuum flat-panel CRT display that operates according to field-emission principles, Cho discloses at cols. 9 and 10 that the display of Fig. 4h has a group of laterally separated electron-emissive elements situated over the baseplate to form a field-

emission cathode. Cho specifies at col. 16 that the flat-panel display of Fig. 7 "is provided with light-emissive elements as described above". Hence, the high-vacuum flat-panel display of Fig. 7 can be provided with a group of laterally separated electron-emissive elements situated over the baseplate.

Cho does not indicate how the display of Fig. 4h is internally configured when it is implemented as a plasma display or a plasma-addressed liquid-crystal display. However, Cho specifies at col. 25 that a getter analogous to getter 74 can be situated in an auxiliary compartment of a reduced-pressure plasma or plasma-addressed liquid-crystal display in which the plasma is formed from inert gas. Cho provides that the inert gas is typically one or more of helium, neon, argon, xenon, and krypton and that the pressure in the main and auxiliary compartments is 1 torr - 0.5 atm, i.e., 1 - 380 torr since 1 atm equals 760 torr.

Independent Claims 1 and 31 each specify that the inert gas in the open space of the sealed enclosure consists "of at least one of (a) helium at a partial pressure of at least $2x10^{-5}$ torr, (b) argon at a partial pressure of at least $3x10^{-5}$ torr, and (c) at least one of neon, krypton, xenon, and radon at a partial pressure of at least $5x10^{-7}$ torr". Since $5x10^{-7}$ torr is the lowest one of the three recited minimum partial pressures for the various inert gases that can be present in the sealed enclosure, Claims 1 and 31 each require that the partial pressure of the inert gas in the open space of the sealed enclosure be at least $5x10^{-7}$ torr. Independent Claims 13 and 39 each directly recite that the open space of the sealed enclosure contains inert gas at a partial pressure of at least $5x10^{-7}$ torr. Hence, each of Claims 1, 13, 31, and 39 requires that the partial pressure of the inert gas in the open space of the sealed enclosure be at least $5x10^{-7}$ torr.

In the situation where Cho implements one of its flat-panel displays as a CRT display, the open space of the display's sealed enclosure is at a high vacuum. Nowhere does Cho indicate, or in any way suggest, that a flat-panel CRT implementation of any of its displays contains inert gas at a partial pressure of $5x10^{-7}$ torr or more. None of Cho's flat-panel CRT displays meets the requirement of Claim 1, 13, 31, or 39 that the open space of the sealed enclosure contain inert gas at a partial pressure of at least $5x10^{-7}$ torr. Consequently, none of Claims 1, 13, 31, and 39 is anticipated by the Cho material dealing with flat-panel CRT displays.

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As to the Cho material dealing with flat-panel plasma displays and flat-panel plasma-addressed liquid-crystal displays, Claims 1, 13, 31, and 39 each require (a) that the electron-emitting device contain an array of laterally separated electron-emissive regions and (b) that the light-emitting device emit light to produce an image upon being struck by electrons emitted from the electron-emissive regions.

In a flat-panel plasma display, a plasma is formed between a backplate structure and a faceplate structure. Electrodes that sustain the plasma and selectively excite portions of it can be arranged in various configurations. When a portion of the plasma is suitably excited, the excited portion emits radiation. In some flat-panel plasma displays, the plasma-emitted radiation is visible light, part of which passes through the faceplate structure to produce the display's image.

Other flat-panel plasma displays contain phosphor material that emits visible light to produce the display's image when struck by UV light in the plasma-emitted radiation. The plasma-emitted radiation which strikes the phosphor material can sometimes include electrons. However, neither of the plate structures nor any of the plasma-excitation electrodes contains any electron-emissive region which strike a light-emitting device to cause it to emit light. Although a flat-panel plasma display typically contains inert gas as described in Cho, such a flat-panel plasma display does not meet the requirement of each of Claims 1, 13, 31, and 39 that the electron-emitting device contain an array of laterally separated electron-emissive regions and that a light-emitting device emit light to produce an image upon being struck by electrons emitted from the electron-emissive regions. Hence, none of Claims 1, 13, 31, and 39 is anticipated by the Cho material dealing with flat-panel plasma displays.

Similar comments apply to the Cho material dealing with flat-panel plasma-addressed liquid-crystal displays. The plasma addressing is achieved with a plasma-addressing section formed with a pair of plates structures, an intervening plasma, and plasma-excitation electrodes which together function as switches that selectively activate overlying portions of a liquid-crystal section.

As in a flat-panel plasma display, neither of the plate structures nor any of the plasma-excitation electrodes of a flat-panel plasma-addressed liquid-crystal display has any electron-emissive region which emits electrons that strike a light-emitting device to cause it

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to emit light. A flat-panel plasma-addressed liquid-crystal display thus does not meet the requirement of each of Claims 1, 13, 31, and 39 that the electron-emitting device contain an array of laterally separated electron-emissive regions and that the light-emitting device emit light upon being struck by electrons emitted by the electron-emissive regions. None of Claims 1, 13, 31, and 39 is anticipated by the Cho material dealing with flat-panel plasma-addressed liquid-crystal displays.

For the preceding reasons, Cho does not anticipate any of Claims 1, 13, 31, and 39. Furthermore, there would be no reason to provide either plate structure of Cho's plasma or plasma-addressed liquid-crystal display with an array of laterally separated electron-emissive regions. Nor, to the extent that the plasma-excitation electrodes may not be part of one or both plates structures, would there by any reason to provide the plasma-excitation electrodes with an array of laterally separated electron-emissive regions. Aside from increasing the display fabrication cost, electron-emissive regions in either plate structure or/and in the plasma-excitation electrodes would serve no useful function in Cho's plasma or plasma-addressed liquid-crystal display. Absent the teachings of the present invention, there would be no reason for Cho to provide the open space of the sealed enclosure in any of Cho's flat-panel CRT displays with inert gas at a partial pressure of at least $5x10^{-7}$ torr. Claims 1, 13, 31, and 39 are therefore patentable over Cho.

Claims 2, 3, 5 - 8, 10, 14 - 16, 23 - 25, 27, 28, 32 - 38, and 40 - 46 all variously depend (directly or indirectly) from Claims 1, 13, 31, and 39. Dependent Claims 2, 3, 5 - 8, 10, 14 - 16, 23 - 25, 27, 28, 32 - 38, and 40 - 46 are thus patentable over Cho for the same reasons as Claims 1, 13, 31, and 39. The same applies to new Claims 47 and 48 due to their dependence from Claims 31 and 39.

Claims 4, 11, 12, 29, and 30 have been rejected under 35 USC 103(a) as obvious based on Cho in view of Rakhimov and Konuma, U.S. Patent 6,042,441. This rejection is respectfully traversed in view of the revisions to the claims.

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Konuma discloses a process for cleaning a deflected-beam CRT display prior to display sealing. Fig. 8 of Konuma illustrates its display. In Konuma's cleaning process, getter 3 situated inside the unsealed CRT display is heated to activate getter 3 and cause it to release (emit) gas, including argon and helium. At col. 5, Konuma states that "the sum of"

the partial pressures, including those of argon and helium, reaches 10^{-8} - 10^{-6} torr during the getter heating step.

Konuma subsequently operates its CRT display, apparently at the same time that the display undergoes evacuation in preparation for closing tip tube 4 to hermetically seal the display. Cathode 2 emits electrons, some of which strike the atoms of argon and helium and cause those atoms to ionize. Some of the resultant positive argon and helium ions return to cathode 2 to clean it by a sputtering action. The display evacuation procedure is continued until the argon partial pressure drops to 10^{-8} torr or less at which point tip tube 4 is closed to seal the display.

Claims 4, 11, 12, 29, and 30 all variously depend from Claims 1 and 13.

As mentioned above, Rakhimov deals with the configuration and operation of a lamp. Although Rakhimov indicates that its lamp is suitable for a backlight of a liquid-crystal display, the lamp's electron-emitting device, i.e., cathode 14, does not meet the requirement of Claim 1 or 13 that the electron-emitting device have multiple laterally separated electron-emissive regions. Consequently, nothing in Rakhimov and Cho would provide a person skilled in the art with any incentive or motivation for applying Rakhimov's teachings to Cho's teachings dealing with flat-panel CRT displays so as to achieve the subject matter of Claim 1 or 13.

Nor would anything in Konuma make the subject matter of Claim 1 or 13 obvious in view of Rakhimov, Konuma, and the Cho material dealing with flat-panel displays. In this regard, Konuma deals with cleaning a flat-panel CRT display prior to display sealing whereas Claims 1 and 13 each deal with a (hermetically) sealed display and, insofar as the presence of inert gas in the sealed display enables the display to be cleaned, cleaning the display after display sealing. Although the partial pressure of the inert gas in Konuma's display may be greater than $5x10^{-7}$ torr during display cleaning prior to display sealing, the partial pressure of the argon in Konuma's display is less than 10^{-8} torr after display sealing.

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Konuma does not indicate the partial pressure of the helium in its display after display sealing. However, nothing in Konuma suggests that the sum of the partial pressures of the argon and helium in Konuma's display would be $5x10^{-7}$ torr or more after display sealing. Konuma thus does not meet the requirement of Claim 1 or 13 that the partial pressure of the inert gas in the sealed display be at least $5x10^{-7}$ torr. Even if there were some motivation or

suggestion for applying Konuma to Rakhimov and the Cho material dealing with flat-panel CRT displays, neither of Claims 1 and 13 would be obvious based on Rakhimov, Konuma and the Cho material dealing with flat-panel CRT displays.

Konuma's deflected beam CRT display has a single electron emitter. The same applies to Rakhimov's lamp. The plate structures and plasma-excitation electrodes of Cho's plasma and plasma-addressed liquid-crystal displays do not include electron emitters. Hence, none of Konuma, Rakhimov, and the Cho material dealing with plasma and plasma-addressed liquid-crystal displays meets the requirement of each of Claims 1 and 13 that an electron-emitting device have an array of laterally separated electron-emissive regions. Even if there were some suggestion or motivation for combining Rakhimov, Konuma, and the Cho material dealing with plasma and plasma-addressed liquid-crystal displays, the combination would not teach the full subject matter of Claim 1 or 13.

The net result is that Claims 1 and 13 are both patentable over Rakhimov, Cho, and Konuma[1]. Since Claims 4, 11, 12, 29, and 30 all variously depend from Claims 1 and 13, Claims 4, 11, 12, 29, and 30 are patentable over Rakhimov, Cho, and Konuma for the same reasons as Claims 1 and 13.

Dependent Claims 17 - 22 have been objected to as depending from a rejected base claim[2] but as being allowable if rewritten in independent form. Claims 17 - 22 all depend from Claim 13 which has been shown to be patentable over the applied art. Accordingly, Claims 17 - 22 are allowable in their current form.

New Claim 49 is substantially an independent version of Claim 17 as it depended from the original version of independent Claim 13. Inasmuch as Claim 17 has been indicated as being allowable if rewritten in independent form, Claim 49 should be allowable. New Claims 50 - 60 depend (directly or indirectly) from Claim 49 and should likewise be allowable.

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[1] Independent Claims 31 and 39 are patentable over Rakhimov, Cho, and Konuma for the same reasons as Claims 1 and 13. The same applies to Claims 2, 3, 5 - 10, 14 - 16, 23 - 28, 32 - 38, and 40 - 46 due to the various dependencies from Claims 1, 13, 31, and 39.

[2] The cover page of the Office Action specifies that Claims "17-23" are objected to. In view of the fact that Claim 23 has been rejected as anticipated by both Rakhimov and Cho, Applicants' Attorney has assumed that the cover page of the Office Action was intended to state that Claims "17-22" are objected to.

In short, the 35 USC 112 indefiniteness rejection should be withdrawn. Claims 1 - 60 have been shown to be allowable. Accordingly, Claims 1 - 60 should be allowed so that the application may proceed to issue.

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